

What is claimed is:

1. In a network environment that includes a plurality of  
5 nodes and that uses a markup language to create documents, a  
method for filtering the documents, comprising the steps of:

upon receiving a request from a requesting node among the  
plurality of nodes,

constructing an input Document Object Model (DOM) based  
10 on a document corresponding to the request

storing the input DOM;

identifying elements of the input DOM that have  
previously been stored; and

filtering the input DOM to obtain a filtered DOM, based  
15 on at least one pre-specified rule being applied to the input  
DOM.

2. The method according to claim 1, further comprising the  
step of sending the filtered DOM to the requesting node

20 3. The method according to claim 1, wherein said filtering  
step filters out previously received content from the filtered  
DOM based upon the identified elements.

4. The method according to claim 1, wherein said filtering step filters out non-relevant content from the filtered DOM with respect to at least one of the request and at least one previous request.

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5. The method according to claim 1, wherein said filtering step comprises the step of identifying at least one of relevant content and the non-relevant content with respect to the identified elements.

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6. The method according to claim 1, wherein said method further comprises the step of identifying changed data with respect to at least two interactions between the requesting node and another node from among the plurality of nodes.

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7. The method according to claim 6, wherein said filtering step comprises the step of including only the changed data in the filtered DOM.

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8. The method according to claim 1, wherein the at least one pre-specified rule comprises removing previously received content from the input DOM, when the at least one client device has at least one pre-specified limited resource.

9. The method according to claim 8, wherein the at least one pre-specified limited resource comprises at least one of a bandwidth, a memory capacity, a processing ability, and a display screen area, less than a pre-defined threshold.

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10. The method according to claim 1, wherein the at least one pre-specified rule comprises removing previously received content from the input DOM, when a user of the at least one client device is one of seeing and hearing impaired.

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11. The method according to claim 1, wherein the at least one pre-specified rule comprises removing non-relevant content from the input DOM when the at least one client device has at least one pre-specified limited resource.

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12. The method according to claim 1, wherein the at least one pre-specified rule comprises removing non-relevant content from the input DOM when a user of the at least one client device is one of seeing and hearing impaired.

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13. The method according to claim 1, further comprising the step of inserting a first identifier in the filtered DOM to indicate a filtered status.

14. The method according to claim 13, further comprising the step of inserting a second identifier in the filtered DOM to indicate a source document from which the filtered DOM originated.

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15. The method according to claim 14, wherein the first and the second identifiers are comprised in a HyperText Transfer Protocol (HTTP) extension header.

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16. The method according to claim 14, wherein the first and the second identifiers are comprised in a transport layer for Wireless Application Protocol (WAP).

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17. The method according to claim 14, wherein the second identifier is a Uniform Resource Locator (URL) specifying a location of the source document.

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18. The method according to claim 1, wherein said filtering step comprises the step of removing presentational markup from the DOM.

19. The method according to claim 1, wherein said storing step stores the input DOM in a cache, and said identifying step

identifies the elements of the input DOM that have previously been cached.

20. The method according to claim 1, wherein said method is implemented by a program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform said method steps.

21. The method according to claim 1, wherein the markup language is eXtensible Markup Language (XML) and the input DOM and filtered DOM are pseudo DOMs.

22. The method according to claim 1, wherein the network environment is a client/server environment, the plurality of nodes includes a client device, and the requesting node is the client device.

23. The method according to claim 1, wherein the network environment is a client/server environment, the plurality of nodes includes at least one client device, at least one server, and at least one intermediary coupled therebetween, and the requesting node is an intermediary.

24. The method according to claim 6, wherein the network environment is a client/server environment, the plurality of nodes includes at least one client device and at least one server, the requesting node is a client device and the other node is the at least one server.

25. The method according to claim 6, wherein the network environment is a client/server environment, the plurality of nodes includes at least one client device, at least one server, and at least one intermediary coupled therebetween, the requesting node is a client device or an intermediary and the other node is a server or another intermediary.

26. The method according to claim 1, wherein the network environment is a client/server environment, the plurality of nodes includes a client device, and said filtering step is performed by the client device.

27. The method according to claim 1, wherein the network environment is a client/server environment, the plurality of nodes includes at least one client device, at least one server, and at least one intermediary coupled therebetween, and said filtering step is performed by the at least one intermediary.

28. A system for filtering markup language documents in a client/server environment having at least one client device and at least one server, said system comprising:

an intermediary operatively coupled between the at least one client device and the at least one server, adapted to receive a request sent from the at least one client device or from another intermediary, and to receive a document corresponding to the request;

a filter operatively coupled to said intermediary, adapted to build an input document object model (DOM) based on the document, and filter the input DOM to output a filtered DOM based on at least one pre-specified rule being applied to the input DOM; and

a differential DOM coder operatively coupled to at least one of the at least one client device and the intermediary, adapted to receive the filtered DOM and to identify and output at least changed data with respect to the input DOM and the filtered DOM.

29. A system for filtering markup language documents in a client/server environment having at least one client device and at least one server, said system comprising:

an intermediary operatively coupled between the at least one client device and the at least one server, adapted to receive a request from the at least one client device or another

intermediary, receive a document corresponding to the request,  
and to output a filtered document object model (DOM) to the at  
least one client device or the other intermediary;

a storage device operatively coupled to said intermediary,  
5 adapted to store an input DOM, and identify elements of the input  
DOM that have previously been stored; and

a filter operatively coupled to said storage device and said  
intermediary or the other intermediary, adapted to build the  
input DOM based on the document, and filter the input DOM to  
10 obtain the filtered DOM based on at least one pre-specified rule  
being applied to at least one of the input DOM and the identified  
elements.

30. The system according to claim 29, wherein at least one  
15 of said storage device and said filter is disposed within said  
intermediary, the other intermediary, or a combination thereof.

31. The system according to claim 29, wherein said storage  
device is further adapted to track a history of user interaction.

20 32. The system according to claim 31, wherein the history  
of user interaction comprises World Wide Web (WWW) pages visited  
during a given interactive session.



33. The system according to claim 29, wherein said storage device is a cache.

34. The system according to claim 29, wherein said filter is adapted to filter the input DOM so as to remove previously received content therefrom.

35. The system according to claim 29, wherein said filter is adapted to filter the input DOM so as to remove non-relevant content therefrom with respect to at least one of the request and at least one previous request.

36. The system according to claim 29, wherein said client device further comprises a speech synthesis system adapted to audibly reproduce an audio signal corresponding to the filtered DOM.

37. The system according to claim 29, wherein said filter is adapted to filter the input DOM one of prior to, during, and after transcoding at least one page corresponding to the input DOM.

38. The system according to claim 37, wherein the at least one page comprises at least one XML page and said filter is

further adapted to filter the input DOM prior to transcoding the  
at least one XML page to at least one target presentation page in  
a multi-channel application or prior to transcoding the at least  
one XML page to at least one synchronized page in a multi-modal  
mode.

39. The system according to claim 29, wherein said filter  
is further adapted to filter the input DOM in a multi-channel  
mode.

40. The system according to claim 29, wherein said filter  
is further adapted to filter the input DOM in a multi-modal mode.

41. The system according to claim 29, wherein said filter  
is further adapted to filter the input DOM in a channel/modality  
independent mode.

42. The system according to claim 29, wherein the filtered  
DOM includes at least one of speech, Wireless Markup Language  
(WML), Voice eXtensible Markup Language (VoiceXML), and  
Conversational Markup Language (CML).